

## **DIELECTRIC BARRIER LAYER FILMS**

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### **ABSTRACT**

In accordance with the present invention, a dielectric barrier layer is presented. A barrier layer according to the present invention includes a densified amorphous dielectric layer deposited on a substrate by pulsed-DC, substrate biased physical vapor deposition, wherein the densified amorphous dielectric layer is a barrier layer. A method of forming a barrier layer according to the present inventions includes providing a substrate and depositing a highly densified, amorphous, dielectric material over the substrate in a pulsed-dc, biased, wide target physical vapor deposition process. Further, the process can include performing a soft-metal breath treatment on the substrate. Such barrier layers can be utilized as electrical layers, optical layers, immunological layers, or tribological layers.